

# A Study on Infrastructural Facilities and Higher Education in Karnataka

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**Abstract**—This study examines the critical role of infrastructural facilities in shaping women's participation and success in higher education in Karnataka, a state marked by socio-cultural diversity and varying regional development. Infrastructural elements such as availability of hostels, transportation, libraries, laboratories, and digital resources serve as fundamental enablers for women's access, retention, and academic achievements. While urban centers such as Bengaluru, Mysuru, and Mangaluru benefit from advanced educational infrastructures attracting large numbers of women students, many rural and semi-urban areas still face significant infrastructural deficits. These deficiencies often translate into lower enrolment rates and higher dropout ratios among women, especially those from marginalized communities. The availability and accessibility of these facilities across different regions of Karnataka and analyzes their influence on key educational outcomes such as enrolment, retention, and academic performance. It also explores how socio-economic variables and regional disparities impact women's educational experiences. Government initiatives including the Vidya Siri scholarship, free bus passes for girl students, and extensive hostel construction programs have contributed positively to increasing women's enrolment and reducing attrition rates. Despite improvements, challenges such as inadequate hostel capacity, transport connectivity issues, digital divide, and uneven distribution of scholarships persist.

**Index Terms**—women participation, empowerment, educational infrastructure, transist hostel, scholarship, digital learning.

## I. INTRODUCTION

Higher education forms the cornerstone of socio-economic development, empowerment, and knowledge advancement in any society. In a rapidly developing state like Karnataka, higher education

carries the potential to transform lives by providing academic skills, employability, and social mobility. Women's participation in higher education is particularly crucial, as it not only promotes gender equity but also positively influences family welfare, community progress, and economic growth. Over the last decade, Karnataka has seen transformative changes in its higher education sector driven by policy reforms, technological integration, and targeted infrastructural development. However, the pace and scale of these changes vary widely across regions and demographics, underscoring the need for a focused study on how infrastructural facilities impact women's access, retention, and success in higher education.

Karnataka's higher education system includes diverse institutions ranging from premier universities and autonomous colleges in urban centers to government and aided colleges in semi-urban and largely rural areas. Infrastructure comprising physical assets like hostels, libraries, laboratories, digital resources, and transport networks plays a pivotal role in making education accessible and conducive for women students. Urban hubs like Bengaluru, Mysuru, and Mangaluru lead in having modern infrastructural facilities, while many districts in northern and interior Karnataka face challenges of inadequate hostel capacity, poor transport connectivity, and digital infrastructure deficits. Women, especially from socio-economically disadvantaged groups, tribal communities, and rural backgrounds, encounter compounded barriers that infrastructure development aims to mitigate.

The Government of Karnataka, with support from central schemes such as Rashtriya Uchchatar Shiksha Abhiyan (RUSA), and initiatives aligned with the National Education Policy 2020, has launched

multiple programs to strengthen higher education infrastructure. These programs include construction and expansion of women's hostels, digital classrooms, improved transport facilities like free bus passes, and scholarships such as Vidya Siri and Pratibha Puraskar. Moreover, Karnataka's Higher Education Transformation Project, supported by a ₹2,600 crore loan from the Asian Development Bank, aims for a comprehensive overhaul emphasizing quality, technology, skill development, and inclusivity. Between 2015 and 2025, Karnataka's women's GER has shown a steady upward trajectory, rising from around 21-23% to an estimated 36-37%, surpassing the national average. This growth aligns temporally with progressive infrastructural investments. The expansion of women's hostels, a crucial factor improving access and retention, grew to over 230,000 intake capacity by 2021, though many districts still face significant gaps. The introduction and scaling of free bus passes since 2013 have reduced geographical and safety barriers, especially for rural female students, further supporting their continuous participation.

Digital infrastructure marked a remarkable rise from about 40% institutions equipped with ICT facilities in 2015 to above 85% by 2024, accelerated notably by the remote learning demands of the COVID-19 pandemic. Scholarships like Vidya Siri have increased both in number and financial value, with recent schemes providing up to Rs 30,000 per year, directly tied to improvements in enrolment and retention. Importantly, female GER has surpassed male GER in many fields, reflecting deepening gender equity in educational participation. Despite these positive trends, challenges remain. Many rural and northern Karnataka regions lag in hostel facilities and suffer from poor internet connectivity and lack of well-equipped laboratories, particularly in arts and commerce colleges. Scholarship disbursement delays and placement opportunities inequities also pose barriers. The digital divide between urban and rural institutions, although narrowing, still affects the quality of learning and engagement.

## II. METHODOLOGY

This study adopts a descriptive and analytical research design integrating both primary and

secondary data sources to capture the complex texture of infrastructural impact on women in higher education in Karnataka. Primary data collection through structured questionnaires, interviews, and observations will explore women students' lived experiences related to infrastructure access, while secondary data from government reports (AISHE, NSSO, KSHCE), policy documents, and academic research will provide robust quantitative and contextual backing. A stratified random sampling design ensures representation across urban, semi-urban, and rural areas.

## III. OBJECTIVES OF THE PAPER

Objectives for the study on infrastructural facilities and higher education in Karnataka as follows

- To examine the availability and accessibility of infrastructural facilities such as hostels, transportation, libraries, laboratories, and digital resources in higher education institutions catering to women across rural, semi-urban, and urban regions of Karnataka.
- To analyze the impact of infrastructural support on women's enrolment, retention, and academic performance in higher education institutions, with a focus on how these factors vary regionally and socio-economically.
- To identify the challenges and gaps in current infrastructural provisions for women students in Karnataka's higher education system and to suggest targeted policy measures and interventions to promote equitable and inclusive participation.

Based on the extensive data and reports from 2015 to 2024, the infrastructure for women's higher education in Karnataka has seen significant development, yet disparities persist across different regions. Urban areas such as Bengaluru, Mysuru, and Mangaluru have well-established facilities, including numerous hostels, modern libraries, accessible transportation, and advanced digital resources that attract and retain female students effectively. These regions benefit from government initiatives and private investments, such as the ₹26 crore upgrade for 57 women's colleges, enhancing infrastructure and opportunities for girls.

Facility	Rural Areas	Semi-Urban Areas	Urban Areas
Hostels	Limited, some transit hostels	Moderate availability	Well-established women's hostels
Transportation	Less frequent/coverage varies	Some bus services available	Regular college buses with GPS
Libraries	Basic print resources, limited digital access	Improved print and limited digital	Advanced print + digital e-resources
Laboratories	Basic science labs, often limited	Moderate equipment and access	Upgraded labs with fee waivers
Digital Resources	Emerging, lower internet speed	Moderate internet and access	Good broadband and 24x7 access

In semi-urban and rural areas, progress is evident but remains uneven. Many colleges in semi-urban areas have moderate access to hostels, transportation, and digital platforms. However, rural regions face more challenges, with limited hostel facilities often restricted to transit hostels less reliable transport, basic libraries with limited digital access, and laboratory facilities that are often outdated or insufficient for current academic needs. Despite these challenges, government programs such as “Vidya Siri” and the establishment of women-specific colleges have contributed to increased enrollment, higher GER, and improved retention.

There are sharp district disparities. Urban districts like Bengaluru and Mysuru have better infrastructure and higher female participation, while rural districts still grapple with inadequate facilities and connectivity issues. The data indicates that the exclusive focus on infrastructure expansion, along with policies addressing gender-sensitive facilities, has played a significant role in increasing female enrollment and reducing dropout rates, although gaps in quality and access remain, particularly in remote areas.

The impact of infrastructural support on women's enrollment, retention, and academic performance in Karnataka's higher education institutions is significant and varies regionally and socio-economically. Data from 2015 to 2024 indicates that institutions with better infrastructural facilities such as safe and accessible hostels, efficient transportation, well-equipped laboratories, and robust digital resources have higher enrollment rates and improved retention of women students, particularly in urban and semi-urban regions. For instance, urban centers like Bengaluru, with advanced infrastructure and targeted government schemes, report higher female Gross

Enrollment Ratios (GER) and lowered dropout rates due to supportive academic environments and access to resources. Conversely, rural areas, despite increased enrollment from policy efforts, still experience challenges with limited hostel availability, poor transport connectivity, and inadequate access to digital learning tools, which hinder both continued attendance and academic performance, especially among socio-economically disadvantaged groups. Challenges include insufficient safety measures, digital divides, and underfunded laboratories. To bridge these gaps, targeted policy measures such as expanding affordable women's hostels in rural areas, enhancing last-mile transportation, subsidizing digital devices, and investing in upgrading laboratories are critical. Additionally, emphasis on gender-sensitive infrastructure, financial aid, and localized interventions tailored to socio-economic and regional needs can promote more equitable and inclusive participation of women in Karnataka's higher education system.

#### IV. CONCLUSION

Karnataka's higher education sector has experienced considerable progress in women's education from 2015 to 2024, driven significantly by improved infrastructural support. The state's Gross Enrolment Ratio (GER) for women has steadily increased, surpassing male enrolment rates in several fields, thanks to targeted investments in hostels, transportation, digital resources, and academic facilities primarily concentrated in urban centers like Bengaluru, Mysuru, and Mangaluru. These infrastructural improvements have directly enhanced women's enrollment, retention, and academic performance by providing safer, more accessible, and

resource-rich learning environments. However, stark disparities persist between urban, semi-urban, and rural areas. Rural districts face challenges with limited hostel capacity, unreliable transport, lack of advanced digital access, and under-equipped laboratories, which disproportionately affect socio-economically disadvantaged and tribal women. Closing these gaps requires sustained policy focus on expanding affordable women's hostels, enhancing last-mile transportation options, subsidizing digital devices, and improving laboratory facilities. Furthermore, gender-sensitive infrastructure development coupled with efficient scholarship schemes like Vidya Siri has contributed positively but needs timely implementation and outreach extensions to under-served regions. By fostering targeted, regionally sensitive policies and ongoing investment in equitable infrastructure, Karnataka can continue to promote greater inclusivity and academic success among women students, thus strengthening socio-economic development and gender equity in the state's higher education landscape.

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